

Message

From: Swain, Ed (MPCA) [edward.swain@state.mn.us]
Sent: 6/8/2017 2:48:52 PM
To: Engelking, Pat (MPCA) [pat.engelking@state.mn.us]
Subject: FW: Technical Paper to Support Alternate MBLR Sulfate Equation: Follow-Up from Feb 23rd Meeting
Attachments: Ramboll Environ. 2017 Sulfate Standard Alternative MBLR Equations. 16May 2017.pdf; Ramboll Environ. 2017 Sulfate Standard Alternative MBLR Equations_ Attachment 1 updated May 30 2017.pdf

Pat,
 Below is an email exchange that Robin Richards and I had in May.
 In addition, attached are reports referred to in the emails: Ramboll Environ report dated May 16, and an update to Attachment 1 updated May 30.
 Ed

From: Robin Richards [mailto:rrichards@ramboll.com]
Sent: Tuesday, May 30, 2017 12:13 PM
To: Swain, Ed (MPCA) <edward.swain@state.mn.us>
Cc: Neuschler, Catherine (MPCA) <catherine.neuschler@state.mn.us>; Lotthammer, Shannon (MPCA) <shannon.lotthammer@state.mn.us>; Bael, David (MPCA) <david.bael@state.mn.us>
Subject: RE: Technical Paper to Support Alternate MBLR Sulfate Equation: Follow-Up from Feb 23rd Meeting

Ed:
 We went back to the original data and found the issue. In the data files for the Spearman correlations we incorrectly re-coded three non-detects in the database we used for the Spearman's statistical analysis. Upon correction of the problem and we get the same results as presented in the draft TSD table.
 Attached is the updated Attachment 1.
 And thanks for the double check!

Yours sincerely
Robin L. Richards, REM
 Principal
 Water Management and Planning Department Manager

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From: Swain, Ed (MPCA) [mailto:edward.swain@state.mn.us]
Sent: Tuesday, May 23, 2017 2:13 PM
To: Robin Richards <rrichards@ramboll.com>
Cc: Neuschler, Catherine (MPCA) <catherine.neuschler@state.mn.us>; Lotthammer, Shannon (MPCA) <shannon.lotthammer@state.mn.us>; Bael, David (MPCA) <david.bael@state.mn.us>
Subject: RE: Technical Paper to Support Alternate MBLR Sulfate Equation: Follow-Up from Feb 23rd Meeting

Hi Robin,

I was forwarded the email below, including the new Technical Paper. There is a lot to digest in there, but I would like to make two comments. First, there may be a mis-communication somewhere, as there seems to be an impression that the MPCA use of Class B for developing the equation did not use site FS-85, Bean Lake. In fact, MPCA analyses used Bean Lake in the multiple binary logistic regression even though it has a very high porewater sulfide concentration of 16 mg/L (we found that in logistic regressions, the high value did not significantly affect the model). Perhaps confusingly, the Pollman structural equation model did exclude two high-sulfide samples, including Bean Lake.

Second, Attachment 1 in the Technical Paper highlights corrections to Table 2-2 in the MPCA's draft TSD. I agree that five significance levels were mis-stated for the Binary Logistic Regression and WMW Tests, and we will correct those in the final TSD. However, Attachment 1 contains three or four numerical corrections in correlation coefficients and associated significance levels that I cannot replicate. I re-ran the Spearman correlations and produce the same values as had been presented in TSD Table 2-2, which makes me think that the MPCA data file is different from the one that your analysis was based on. Could you please send me the data that produced the different correlations? I would like to track down why the correlations are different.

Thanks (in advance!) for your help,
Ed

From: Robin Richards [mailto:rrichards@ramboll.com]

Sent: Tuesday, May 16, 2017 11:34 AM

To: Stine, John (MPCA) <john.stine@state.mn.us>; Flood, Rebecca (MPCA) <rebecca.flood@state.mn.us>; Lotthammer, Shannon (MPCA) <shannon.lotthammer@state.mn.us>; Neuschler, Catherine (MPCA) <catherine.neuschler@state.mn.us>

Cc: Beranek, Rob <Rob.Beranek@CliffsNR.com>

Subject: Technical Paper to Support Alternate MBLR Sulfate Equation: Follow-Up from Feb 23rd Meeting

All:

As we discussed at the meeting Ramboll Environ was to provide a technical paper supporting an alternate MBLR equation to determine the sulfate standard to protect a designated use of water as a wild rice water. The alternate MBLR equation is as compared to the MBLR equation presented by MPCA in the draft TSD.

Since our meeting, MPCA shared some data and details that underline the statistical analyses (and inputs) for the Pastor sulfide hydroponics study. As the multiple lines of evidence include sulfide hydroponics work, we invested the effort to evaluate this information and how the results of the Pastor, Fort, and field interact to support a wild rice porewater sulfide threshold. This analysis is included in the attached technical paper. We still support, using multiple lines of evidence, use of 300 ug/L as a conservative and appropriate wild rice porewater sulfide threshold.

Please let me know if you have questions on the technical paper supporting the Feb 23rd meeting presentation.

Thank you for your time and attention,

Yours sincerely

Robin L. Richards, REM

Principal

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